

NNG10299022R

Clause J.1 Attachment A  
STATEMENT OF WORK  
FOR  
NASA SAFETY OFFICE CONTRACT  
May 2011

## NASA Safety Office Contract (NSOC)

### Statement of Work

#### **1.0 Introduction**

National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's (GSFC) Wallops Flight Facility WFF), located on Virginia's Eastern Shore, was established in 1945 by the National Advisory Committee for Aeronautics as a center for aeronautic research. Wallop's is one of the oldest launch sites in the world. Our support of scientific research and orbital and suborbital payloads places us at the center of NASA's space and Earth sciences.

Built to conduct aeronautical research using rocket-propelled vehicles, Wallops launched its first rocket on July 4, 1945. Since then, we have fulfilled our mission with the launch of more than 14,000 rockets.

Over the years, our launch range has grown to include six launch pads, assembly facilities and state-of-the-art instrumentation. In addition, our mobile launch facilities enable our scientists and engineers to launch rockets around the world. The science dictates the launch site; we provide the expertise and instrumentation to launch, track, acquire data and recover the payload.

Wallops is now NASA's principal facility for management and implementation of suborbital research programs. The research and responsibilities of Wallops Flight Facility are centered on the philosophy of providing a fast, low cost, highly flexible and safe response to meet the needs of the United States' aerospace technology interests and science research. The 1,000 full-time Civil Service and contractor employees act as a team to accomplish our mission in the spirit of this philosophy. NASA also opens its unique facilities to industry for space and aeronautics research. Wallops expects an increase in commercial launch activity in the near future. WFF is transitioning to a larger class of liquid propellant support in order to accommodate classes of vehicle capable of carrying at least 5,500 kg to orbit.

Wallops Flight Facility's Research Range is a unique national resource enabling flexible, low-cost space access, in-flight science, and technology research for all of NASA and the Nation. It is the only launch range NASA owns. The Wallops Research Range (WRR) supports missions and projects that span NASA's major activities in Earth and Space Science, Aeronautics, Outreach and Education, Exploration and Planetary Systems, and Space Operations.

The Wallops Research Range provides services for four distinctly different customer sets: NASA, other Federal agencies, commercial entities and academia. The missions from

these customers can range from something as large as a multi-million dollar launch to orbit to as small as a few thousand dollar passive chemical detection sensor test for the Department of Defense. The missions are executed from Wallops and from many other places around the world. Last year there were 716 discrete events (launches, flights, etc.) to support these customers. The mission set to be executed changes daily as customers request new support, change existing mission requirements, or postpone/delete missions. This constant flux requires a continuing reallocation of scheduled resources. Examples of this reallocation includes delayed scheduled maintenance to enable new mission requests, completing systems upgrades ahead of schedule to support accelerated mission requests, and full mobile range deployments to worldwide locations to support unanticipated science events.

In order to support Range activities and operations, Wallops has an extensive Institutional Safety Program that promotes strict compliance with NASA and Occupational Safety and Health Administration (OSHA) standards related to the operations and construction of new or modified facilities and complex systems. This includes, but is not limited to, Fire Protection, Industrial Hygiene, Pressure Systems, Explosives, Facilities, Lifting Devices, Electrical, Hazardous Materials, Emergency Preparedness, Mishap Reporting, Confined Spaces, and Ergonomics.

Currently safety support services are provided through a delivery order under GSA contract GS23F0092K supporting all engineering services at Wallops. An increase in complexity of the various future missions will require specialized range safety expertise not currently available to the Wallops Safety Office. NASA has decided to establish a standalone support contract vehicle for all range and institutional safety services. This contract will support the NASA WFF Safety Office Code 800 and replace the safety support currently being provided by the GSA contract.

## **2.0 Program Management**

### **General**

The contractor shall be responsible for providing support to the WFF Safety Office to manage all safety aspects of Range Safety missions as well to provide support for the Institutional Safety needs of the facility through the following functions: program management, task implementation, professional training, continuous performance risk management, contract management, subcontract administration, quality control, and data management.

The overall scope of this contract is to provide Range Safety and Institutional Safety supplemental support services for NASA's Wallops Flight Facility (WFF), and the NASA WFF Research Range. WFF is home to the NASA Sounding Rockets Program

Office, the NASA Balloon Programs Office and the NASA Aircraft Office. In addition, WFF supports various NASA and non-NASA projects as the lead range.

The Contractor shall have the capability to meet surge demands, i.e. new programs, projects start up or multiple programs and projects conducted simultaneously. This support shall be on-demand until such time as the surge no longer requires additional support.

The contractor will procure all materials for this contract according to NASA Federal Acquisition Regulation (FAR) and FAR Regulations.

The contractor shall provide the personnel with the specialized expertise to support the larger class of liquid propellant required to accommodate classes of vehicle capable of carrying at least 5,500 kg to orbit. The contractor shall also be capable of providing personnel having the capability to make recommendations to the Government regarding how the operations should be accomplished to ensure safety of range/off-range personnel during fueling, transportation, storage and launch of these expendable launch vehicles.

Work will be issued to the contractor via task order and the contractor shall assure all work requirements are accomplished within the specified time limits, within the prescribed quality standards and within the cost estimation.

The contractor shall furnish accurate overall information which provides the Government sufficient insight into the Contractor's ability to analyze, mitigate, and control performance risks.

The contractor shall provide qualified personnel with the necessary training, security clearances, and technical expertise in the functional support areas required. Typical expertise that may be required on a day-to-day basis includes, but is not limited to, aerospace engineers, electrical engineers, mechanical engineers, chemical engineers, safety engineers, and fire protection engineers. For special projects, more specialized expertise may be needed such as experience with liquid fueling operations, as specified in the task order defining the requirement.

Personnel requiring certification on specialized equipment, or systems, must be certified by the vendor, a vendor approved organization, Government organization, or as otherwise required.

All personnel proposed shall have at a minimum, a National Agency Check (NAC), or current equivalent as required by Homeland Security Presidential Directive (HSPD)-12, either completed or in progress.

The contractor shall develop and maintain a Program Management Plan (PMP) for tracking programs supported, range safety services customer requirements, services provided, actual labor hours, and material costs.

A risk management plan, including how the contractor will be performing continuous performance risk management, shall be delivered by the contractor with their proposal. The proposer shall list the five highest risks for performance of this contract with their proposal. Continuous risk management practices shall be documented, implemented, and evaluated for effectiveness.

The contractor shall adopt the WFF Safety Office quality management system by use of the Goddard Management System Procedures approved by the Wallops Safety Office. Compliance by the contractor is required. Examples of the Wallops Management System Procedures can be found in the bidder's library. Reference the 803-PGs, 803-WIs, GPD 8500.1, GPR 1600.1, NPR 8715.3, NPR 8715.5, and RSM 2002.

The contractor shall participate in meetings and reviews as defined by the government in the individual Task Order to ensure adequate communication to range operations personnel, NASA and WRR customers. These activities include, but are not limited to, representing NASA as a panel member, reviewer, or presenter of technical material for projects at such meetings as Mission Initiation Conferences, Preliminary/Critical Design Reviews, Technical Information Meetings, and Launch/Flight Readiness Reviews which may occur from several weeks apart for smaller projects to many months apart for large missions such as Expendable Launch Vehicles. The contractor shall also participate in meetings such as weekly staff meetings as required. For more information on the type of participation required, see SOW section 4.

#### Human Capital Management

The Wallops Range supports a diverse set of customer mission requirements and therefore the operational hours shall vary as individual mission requirements dictate.

Normal duty hours of operation shall be 0800-1630 local time, Monday – Friday.

Contractor personnel shall be required to travel as identified in individual task orders. The contractor shall perform associated travel to and from site locations for equipment and systems requiring contractor actions. All travel shall be in accordance with Joint Travel Regulations.

All contractor personnel travel requirements shall be performed by the contractor including but not limited to medical certifications, passports, ticketing and transportation, and lodging.

### Mission Analysis Tools and Automation

The Contractor shall use existing WFF Government owned software tools for safety analysis. In addition, WFF Safety is in the process of automating our safety analysis capability. Reliability, independent verification and validation, speed, flexibility, robustness, transparency and growth potential are significant attributes of the tools. The contractor is expected to augment and enhance that effort by building, acquiring, locating, providing, identifying and learning how to use automated tools. Areas of particular interest include but are not limited to:

- Guided launch vehicle safety related risk analysis
- Unguided/Sounding Rockets safety related risk analysis
- High Altitude Balloon safety related risk analysis
- Uninhabited Aerial Systems safety related risk analysis
- Automation of Flight Termination System reliability analysis
- Toxic release propagation/dispersion
- Laser/directed energy safety related risk analysis
- Detonation affects to include overpressure (glass breakage, human affects sheltered/unsheltered), fragments, thermal, sound, etc.
- Pressure vessel rupture
- Distance Focused Overpressure analysis
- Assessment of ground affects due to the potential detonation of propellants at the time of ground impact (secondary explosion probabilities and affects)

### Automated Task Ordering Management System

The contractor shall use one of the Government-owned automated task ordering management systems or a contractor developed system allowing access to the necessary

Government points of contact as a means of managing task ordering requirements of this contract.

#### Office Automation Devices and Services

It is anticipated that contractor employees will work onsite, for those employees the contractor is required to utilize services provided by the Government for all desktop and associated equipment and interoperability requirements (including desktop and laptop computers, software systems, fax machines, cell phones, and networked printers). The Wallops Center Network Environment (CNE) will supply all infrastructures and associated services. Offsite employees utilized by the contractor will not be provided office automation devices and services.

#### Information Technology Systems Management

In order to comply with the Section 508 Standards for Electronic and Information Technology, the contractor shall perform all software application development in compliance with the technical standards delineated in 36 Code of Federal Regulations (CFR) Part 1194.21 Software Applications and Operating Systems unless approved otherwise by the Contracting Officer's Technical Representative (COTR). There are no known requirements for compatibility with existing systems/programs but future systems/programs may require 508 Electronic and Information Technology (EIT) compliance in specific areas and will be indicated in the individual task order.

#### Health and Safety Management

A comprehensive and proactive health and safety program is required. The contractor shall perform the requirements of this contract using the safety and health guidelines provided within the Occupational Safety and Health Act, NASA Procedural Requirement (NPR) 8715.3, the GSFC Environmental Policy and Program Management, GPD (Goddard Procedural Directive) 8500.1, and any other directives contained in this contract. The contractor shall ensure that employees are aware of and trained relative to safety and health requirements associated with their jobs and positions.

#### Physical Security Management

The Contractor shall safeguard all Government property provided for contractor use in accordance with the clauses of this contract.

Government facilities, support equipment, and material shall be secured when not in use. The GSFC Security Manual, Goddard Handbook (GHB) 1600.1, will be utilized in evaluating performance under this requirement.

### Quality Management

The contractor shall be certified or compliant with an international quality standard (either AS9100/2009 or ISO 9001/2008). For certification to an international quality standard, the contractor is responsible for all costs and activities associated with establishing and maintaining the certification. For compliance to an international quality standard, the Government may choose to audit, or have a third-party audit, the contractor's quality management system to ensure compliance with the standard.

The contractor shall adhere to Voluntary Protection Program (VPP) compliant policies and procedures in the execution of this contract.

### **3.0 Programmatic Safety**

The Contractor shall adhere to all Procedural Guidelines (PG) and Work Instructions (WI) utilized by the WFF Safety Office, some of which are included in the following sections.

Certain mission data such as flight profile data, vehicle radar signatures, vehicle performance data, etc. are known as classified data for certain missions. Contract personnel are likely to be exposed to classified data or to work closely with NASA and their customers for requirements planning, etc., and shall have at least a SECRET level security classification to meet unique classified mission requirements support at the Wallops Range unless otherwise waived by the Government.

By the end of Phase In, the contractor shall provide a list of employees who do not have SECRET level classification and for each; they shall be noted as either in progress, or being requested for exemption from this requirement with a justification.

The Contractor shall provide expert review and assurance that deliverables comply with the applicable safety requirements and implementation plans, including but not limited to the following:

- Ground Safety Plans/Data Packages;
- Flight Safety Plans/Data Packages;
- Flight Termination System Review Packages;
- Waivers and Equivalent Level of Safety (ELS);



- Hazard analyses;
- Reliability analyses and Probabilistic Risk Assessments (PRAs) for safety related risks;
- Worst Case Analyses;
- Failure Modes, Effects, and Criticality Analysis (FMECAs);
- Processes/procedures;
- Nonconformance reports;
- Safety related Risk Management Plans;
- Safety related Risk Analyses; and
- Qualification and Acceptance data packages.

The Contractor shall provide reports or review results to ensure compliance with applicable safety requirements.

The contractor shall participate in meetings and reviews as requested by the government to ensure adequate communication to range operations personnel, NASA, and Wallops range customers.

With the NASA/contractor team approach desired, success is something the TEAM must attain and those either presenting or on the board of these reviews are part of the team and desire success in all aspects.

#### 4.0 Ground Safety

Ground Safety provides for the assessment and documentation of safety related risks and hazards associated with the ground processing of rockets and their payloads, aircraft-borne scientific experiments, scientific balloons and their payloads, Uninhabited Aerial Systems and various other projects involving hazardous systems and/or hazardous operations. This process is documented in 803-Procedures and Guidelines (PG)-8715.1.13, Ground Safety Process.

The Contractor shall:

- Compile information relevant to energetic materials and their systems, high pressure systems, hazardous chemicals and their systems, stored energy devices, hazardous mechanical systems, any other hazardous systems, and the electrical circuitry required to activate that hazardous system,

- Review the information and procedures for compliance of the aforementioned systems to the design requirements in the latest release of the Wallops Range Safety Manual.
- Document these efforts in Risk Analysis Reports and Ground Safety Plans, but other forms of documentation may also be compiled by the ground safety analyst, including: hazard analysis reports, procedure and system approval memoranda, safety engineering notes, safety analysis reports and other forms of documentation as requested by the Government.

Ground Safety team members also support all operations as part of the Project Team. As a member of the Project Team, the Contractor shall:

- Represent the ground safety group at project meetings and reviews,
- Present ground safety plans and issues at reviews,
- Serve on project design and range review panels,
- Document comments, questions, actions, and concerns and track and report the status of all actions from project meetings, reviews, and panels.
- Support the full range of hazardous operations as the Operations Safety Supervisor,
- Support missions as the Ground Safety Officer, and
- Function as an operations team members as designated by the Range Safety Officer (RSO).

For small projects, reviews may be several weeks apart, but for large projects, they may range from several to many months apart. Other meetings such as staff meetings are generally once per week.

#### System Safety

As a part of the Ground Safety Group, system safety addresses the functionality and reliability of flight systems, whose failure during flight may adversely affect public safety. The greatest portion of this system safety effort is directed towards the certification and check out of launch vehicle Flight Termination Systems. This process is documented in 803-PG-8715.1.5, Range Safety System Certification Process. The Contractor shall:

- Employ the following analytical techniques during the systems safety analysis effort: Failure Modes and Effects Analysis (FMEA), fault tree analysis,

Preliminary Hazards Analysis (PHA), sneak circuit analysis, and other techniques.

- Participate in Technical Interchange Meetings (TIM) and other design reviews, to gather the information necessary to conduct their analysis.
- Review acceptance and qualification test reports on Flight Termination System components for compliance to the Wallops Range Safety Manual.
- Function as the System Safety Officer in support of the Range Safety Officer during operations by monitoring the health and status of the Flight Termination Systems.

## 5.0 Flight Safety

Flight Safety provides for the assessment and documentation of hazards and resulting safety related risks associated with the flight of aerospace vehicles and payloads. This involves performing flight safety analyses for a wide range of vehicle types and missions including expendable launch vehicles, sounding rockets, missiles, scientific balloons, aircraft, ground launched projectiles, engagement scenarios, directed energy platforms and Uninhabited Aerial Systems. This process is documented in 803-PG-8715.1.12, Flight Safety Process. The Contractor shall:

- Define data requirements and collect vehicle and mission data and report as requested by the Government,
- Evaluate these data and use them in various flight safety analysis tools, including but not limited to:
  - Probability of Impact models,
  - Expectation of Casualty/Vulnerability models,
  - Debris models,
  - Toxic and Distance Focus Overpressure models, and
  - Trajectory simulations,
- Document the results of these analyses in a safety related Risk Analysis Report,
- Maintain existing computer programs (including Fortran) and develop new, more efficient tools,

- Generate and maintain population and vehicle performance databases,
- Develop mission graphics displays for real-time monitoring of vehicles during missions as requested by the Government including hazard areas for surveillance and validation of hazards,
- Prepare a Flight Safety Plan, which includes responsibilities, flight profiles and dispersions, hazard areas, flight limits, and flight termination criteria,
- Generate wind weighting data for Sounding Rockets,
- Load this data into the real-time wind weighting system,
- Generate Conjunction On Launch Assessment (COLA) data,
- Formulate, document, and publish contingency plans as requested by the Government.

Flight Safety team members also support all operations as part of the Project Team. As a member of the Project Team, the Contractor shall:

- Represent the flight safety group at project meetings and reviews,
- Present flight safety results and issues at reviews,
- Serve on project and range review panels,
- Document comments, questions, actions, and concerns and track and report the status of all actions from project meetings, reviews, and panels.
- Conduct wind weighting operations,
- Generate displays and operate mission graphics computers, and
- Function as an operations team member as designated by Safety personnel.

## 6.0 Range Systems Safety

NASA Range Systems Safety is responsible for the certification of safety critical range systems and for team assignments for all operations. This process is documented in 803-PG-8715.1.8, Range Safety Operations Preparation Process. The Contractor shall:

- Develop requirement documents and test plans for certification efforts, develop simulations for testing new or modified systems, and analyze and

publish test results, (for example such as Range Data Acquisition and Computation (RADAC) System, Flight Termination Systems, or any new safety critical radar or telemetry system).

- Research innovative technologies and techniques to improve Range Safety Processes,
- Conduct Market Research, provide results of Market Research to Safety Office Officials, and procure hardware and software as designated by the Safety Office,
- Support NASA training development,
- Support mission simulation training as part of the mission team certification,
- Serve on teams as designated by NASA Range Safety and,
- Support Post-flight investigations and lessons learned development

7.0 Institutional Safety – The Contractor shall provide highly skilled personnel to provide industrial safety program oversight with an emphasis on strict compliance with NASA and OSHA standards related to facility operations and construction of new facilities and complex systems. Contractor shall have the capability to perform analyses as required on facility systems and operational processes to include Failure Modes and Effects, Operational Safety Analyses and Process Safety Analyses or similar as required. At least one employee shall be a Certified Safety Professional. Contractor shall provide support personnel capable of providing assistance with mishap investigation, safety awareness programs for a large industrial facility and safety consultation for industrial safety topics. The contractor shall provide support in areas of specialties to include:

- Industrial safety compliance with OSHA 29 Code of Federal Regulations (CFR) 1910 and construction safety compliance with OSHA 29CFR1926
- Mishap investigation support for incidents at Wallops Flight Facility and other locations as required based on mission requirements
- Develop and execute inspection processes for facilities and related systems
- Research and determine proper requirements for new facility systems
- Develop and/or maintain safety information systems
- Support and participate in audits related to safety programs and processes
- Serve on boards, teams and working groups as required

- Develop and perform studies and reviews of systems related to facilities such as fire detection and suppression systems, warning systems and facility systems designs
- Examples of training for specialized skills such as office safety, construction safety, confined space and job hazard analysis. Other safety related training may be required based on mission requirements.
- Assist in Mission Assurance programs per NASA requirements as required by individual program or project
- Provide expertise in lifting operation policy development and verification regarding critical lifting operations and equipment
- Provide expertise in pressure systems and pressure vessels
- Provide experience in the establishment and validation of calibration processes for highly complex equipment and components

### **Acronym List**

ARMD - Aeronautics Research Mission Directorate  
 CFR – Code of Federal Regulations  
 CM – Configuration Management  
 CNE - Center Network Environment  
 CO – Contracting Officer  
 COLA - Conjunction On Launch Assessment  
 COTR – Contracting Officer Technical Representative  
 ELS – Equivalent Level of Safety  
 FMEA - Failure Modes and Effects Analysis  
 FMECA - Failure Modes, Effects, and Criticality Analysis  
 FSO – Flight Safety Officer  
 GHB – Goddard Handbook  
 GPD – Goddard Procedural Directive  
 GSFC – Goddard Space Flight Center  
 HSPD – Homeland Security Presidential Directive  
 IMS - Integrated Management System  
 NASA – National Aeronautics and Space Administration  
 NPR – NASA Procedural Requirements  
 NSOC – NASA Safety Office Contract  
 OSHA – Occupational Safety and Health Administration  
 PG – Procedural Requirements  
 PHA - Preliminary Hazards Analysis  
 PRA - Probabilistic Risk Assessment

RSBH – Range Safety Branch Head  
RSO – Range Safety Officer  
RTO – Representative Task Order  
SMD - Science Mission Directorate  
SOW – Statement of Work  
TIM - Technical Interchange Meeting  
TO – Task Order  
WAR – Weekly Activities Report  
WFF – Wallops Flight Facility  
WI – Work Instructions  
WIIMS - Wallops Integrated Institutional Management System  
WRR – Wallops Research Range